### **EXHIBIT A**



FIELD VALIDATION REPORT FOR THE LEECH LAKE BAND OF OJIBWE



PRESENTED BY CONNECTED NATION

APRIL 17, 2013

### INTRODUCTION

Connected Nation, also doing business as Connect Minnesota, (collectively CN), received an invitation from Sally Fineday (Planner/Developer) of the Leech Lake Band of Ojibwe (LLBO) to engage in a field verification and validation exercise to determine the accuracy of the broadband coverage areas on the LLBO reservation as reported by those providers participating in the Connect Minnesota, State Broadband Initiative (SBI) program. CN dispatched four staff members to conduct the testing from February 4 through February 8, 2013.

A kick-off meeting, sponsored by the LLBO, was held at 3:00 pm February 4, 2013, to discuss the objectives of the CN-based field work. LLBO attendees included Sally Fineday (Planner/Developer), Frank Reese (Director, Management Information System), Richard Shulman (MIS Technician), and Madonna Peltier Yawakie and Mel Yawakie (Turtle Island Communications). Attendees from CN included William Hoffman (Program Manager, Connect Minnesota), John Determan, Joel Brick, Terry Holmes, and Chip Spann (CN staff members of the Engineering & Technical Services Department).

CN reiterated that the purpose of the testing was three-fold (i) to compare the field results against the Connect Minnesota broadband map; which, under the guidelines of the United States Department of Commerce (USDC) National Telecommunications and Information Administration (NTIA) collects broadband¹ data for inclusion on the National Broadband Map (NBM) – see **Exhibit A**; (ii) to compare the field results against the Federal Communications Commission (FCC) list of eligible census blocks that may receive certain subsidies from the Connect America Fund (CAF) as part of the FCC's Universal Service Fund (USF) reform – see **Exhibit B**; and (iii) to assist the LLBO in determining opportunities for broadband expansion per their desire to file for eligible telecommunication carrier (ETC) status with the FCC.

### FIELD TESTING

During February 5-7, 2013, CN engineers conducted wireline and spectrum analysis testing at 150 points, many times logging 3-5 tests per point and completed 1,103 mobile data test points (see photographs logged as **Exhibit C**).

WiMAX tests did not indicate the existence of a WiMAX operator anywhere on the LLBO reservation (excluding the LLBO WiMAX system). This platform is distance limited due to the use of time division duplexing (TDD) and can typically offer service only within a reasonable, useable range of 8.35 kilometers (5 miles) from the transmitter base station.

<sup>&</sup>lt;sup>1</sup> Broadband is defined by NTIA as an Internet service that delivers greater than 768 kbps (downstream) by 200 kbps (upstream).

With regard to both wireline and wireless visual testing, the CN engineers used infrastructure attributes that were voluntarily submitted by broadband providers, via datasheets,<sup>2</sup> as part of the October 2012 NTIA inclusion on the NBM. In these instances the latitudes and longitudes (coordinates) of the provider's specific infrastructure were entered into a global positioning system (GPS) enabled software in order to guide the CN engineer to each randomly selected target area. Of the 150 test points, CN *did not* discover information that contradicted the accuracy of the Connect Minnesota broadband map.



However, CN does not agree with the map created by LLBO's GIS analyst in regard to their interpretation of unserved and partially served areas of the reservation. This comparison can be seen on **Exhibit D**. The map produced by LLBO was apparently derived from data that appeared on the NBM (April 2012) while the Connect Minnesota map represents more current data (October 2012) as seen on **Exhibit E**. The underlying difference here, aside from disparate data, is that Connect Minnesota determined the existence of broadband (whether wireline or fixed wireless<sup>3</sup>) in many of the areas depicted on the LLBO maps having "no broadband service."



To further ensure the accuracy of the Connect Minnesota broadband map, speeds tests were randomly conducted outside of the homes and/or offices of LLBO task force members (with the approval of the participating LLBO member), and at "open" WiFi hotspot locations (see samples included on **Exhibit F**). In addition to the wireline and spectrum analysis testing mobile broadband was also included as part of the overall testing process with 1,103 actual speed tests completed across the LLBO reservation (**Exhibit G**).

In total, some 1,600 tests were performed (wireline and mobile wireless) during this 3-day period (see route markers on **Exhibit G**) with 1,103 tests being exclusively on mobile networks being performed along miles of the reservation's roadways. 793 of these tests were collected within the exterior boundaries of the LLBO reservation; 358 (or 45%) of the tests met or exceeded "768 kbps x 200 kbps" and 435 (or 55%) of the tests did not meet "768 kbps x 200 kbps".

<sup>&</sup>lt;sup>2</sup> Information on datasheets typically includes, but is not limited to, the locations of digital subscriber line access multiplexers (DSLAMs), remote terminals (RTs), central offices (COs), points of presence (POPs), wireless transmit sites (Xmitters), spectrum bands (whether licensed or unlicensed), maximum advertised speeds, etc.

<sup>&</sup>lt;sup>3</sup> The Connect Minnesota comparison on Exhibit E intentionally excluded both satellite and mobile broadband services, yet these areas receive near ubiquitous coverage from those two platforms alone.

## **COMMUNITY ANCHOR INSTITUTIONS (CAIS)**

Prior to CN's arrival for testing on the reservation, CN had previously attempted to obtain data (pursuant to NTIA guidelines) for 43 CAIs that reside within the reservation boundaries of the LLBO. Only 3 CAIs had responded to this outreach effort. With the assistance of Sally Fineday, emails were distributed to the majority of the CAIs with a request to complete an electronic survey to further assist in determining availability and affordability of broadband at each CAI location. Although final tabulation of these surveys has yet to be completed, Ms. Fineday is to be commended for her assistance in articulating the importance of this data to the various CAIs within LLBO jurisdiction.

### COMMUNITIES VISITED DURING TESTING

The LLBO task force specifically requested that CN conduct testing at as many remote communities as possible. These included the communities of Inger, Pennington, Ryan Village, et al. In almost every case, CN was able to determine the existence of at least one broadband platform (and in many cases multiple platforms existed). As a general discovery numerous locations were serviced by 2-3 broadband providers (excluding satellite and mobile) particularly in areas where the rate-of-return carriers had "over-built" one another in an effort to reach households.

CN engineers also detected locations (e.g. Pennington Community Center) that were devoid of service; however, these sites were presumably far enough away from a broadband provider's infrastructure that a logical return-on-investment (ROI) may not be realized by the broadband provider. This empirical evidence supported the belief, held by both CN and LLBO, that certain census blocks reported by the provider were accurate in NTIA concept but perhaps flawed in practicality.

This "census block submission" paradox was discussed in great detail on February 25, 2013, with a service provider who admittedly stated that they were compelled to offer service under their provider of last resort (POLR) regulatory requirements but that expansion into certain areas only occurred when the infrastructure build-out was not cost prohibitive compared to their anticipated ROI.

### REGULATORY ENVIRONMENT

#### **Tribal Mobility**

The FCC has set aside \$50 million for a Tribal Mobility Fund Phase I, which will also be conducted as a reverse auction. However, bids for the Tribal Mobility Fund will be based, not on unserved road miles, but unserved locations (households and places of business) on Tribal Lands. All eligible wireless carriers that hold spectrum licenses covering Tribal Lands are eligible to participate in the Tribal Mobility Fund auction. Wireless carriers owned or operated by Tribal governments will

receive a 25% bidding credit in the Tribal Mobility Fund auction. The FCC has not set a date for this auction at this time, but it is expected to do so shortly.

By way of Public Notice, released on November 27, 2012, the FCC, through a Further Notice of Proposes Rule Making (FNPRM), proposed and sought comment on several provisions that focused on the unique connectivity challenges on Tribal lands. In the FNPRM, the FCC sought comment on a possible mechanism that would allocate a specified number of "priority units" to Tribal governments to afford Tribes an opportunity to identify their own priorities.

Priority units for each Tribe would be based upon a percentage (20-30%) of the total population in unserved blocks located within Tribal boundaries. Tribes would have the flexibility to allocate the units in whatever manner they choose (e.g., allocate all of their priority units to one geographic area that is particularly important, or divide the total number of priority units among multiple geographic units according to their relative priority).

### Substantially Underserved Trust Area (SUTA)

The Rural Utilities Service (RUS) planning and lending agency of the United States department of Agriculture (USDA) has implemented the SUTA provisions of the Food, Conservation & Energy Act of 2008 (2008 Farm Bill). These SUTA provisions empower the RUS with new tools to finance improvements in electric, telecommunications, water, and sewer infrastructure in underserved tribal communities.

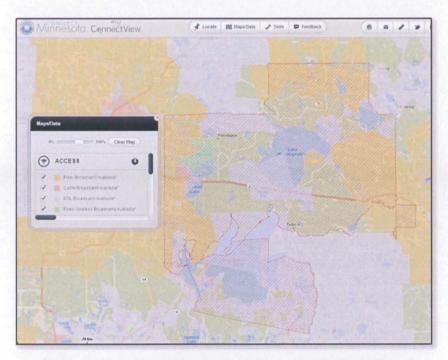
The statute gives RUS discretionary authority to offer interest rates as low as 2%, waive non-duplication requirements, waive matching or credit support requirements, extend repayment terms, and give eligible applications the highest funding priority when projects serve substantially underserved trust territories. SUTA provisions have been in place since March 2011 for the RUS broadband loan program.

### FIELD RESEARCH CONCLUSIONS AND RECOMMENDATIONS

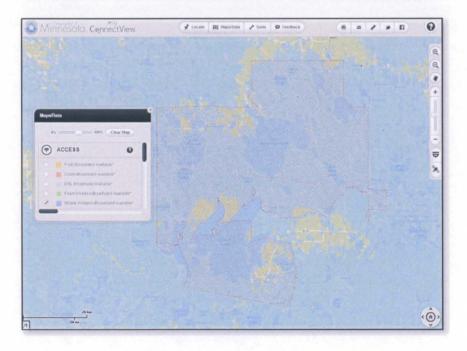
Deemed confidential and not published to the FCC public comment

# EXHIBIT A

Connect Minnesota Broadband Map - Wireline & Wireless Broadband Platforms<sup>4</sup>

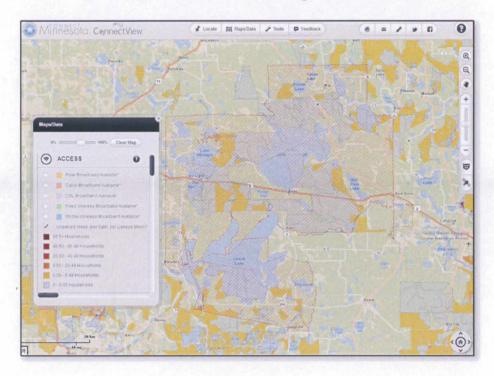


Connect Minnesota Broadband Map - Mobile Broadband



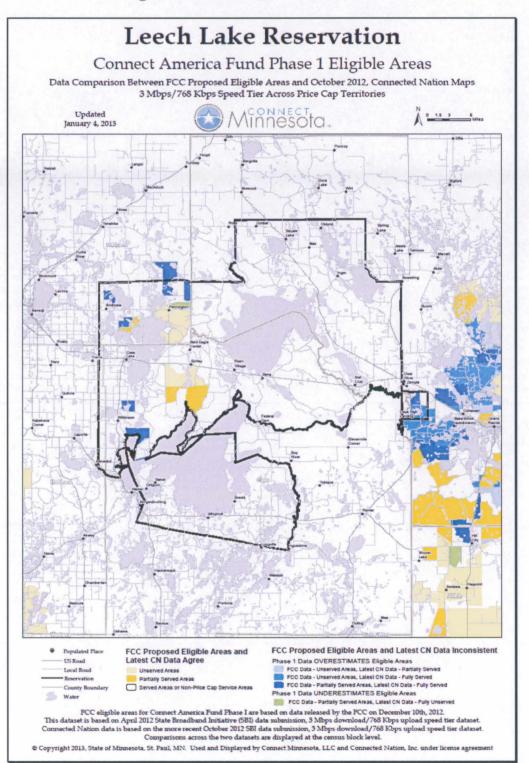
<sup>&</sup>lt;sup>4</sup> Excluding mobile and satellite

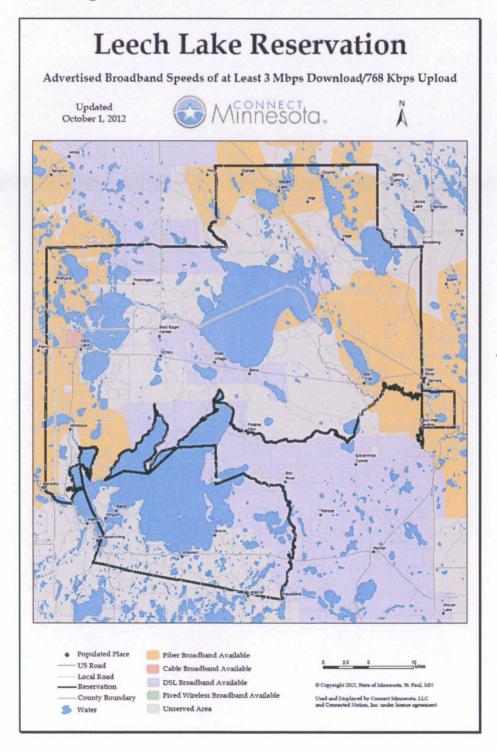
## Connect Minnesota Broadband Map – Unserved Areas



### EXHIBIT B

FCC Eligible Census Blocks - Connect America Fund





# EXHIBIT C

# Field Test Photographs (Descriptions on p. 14)













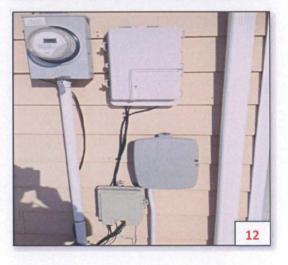










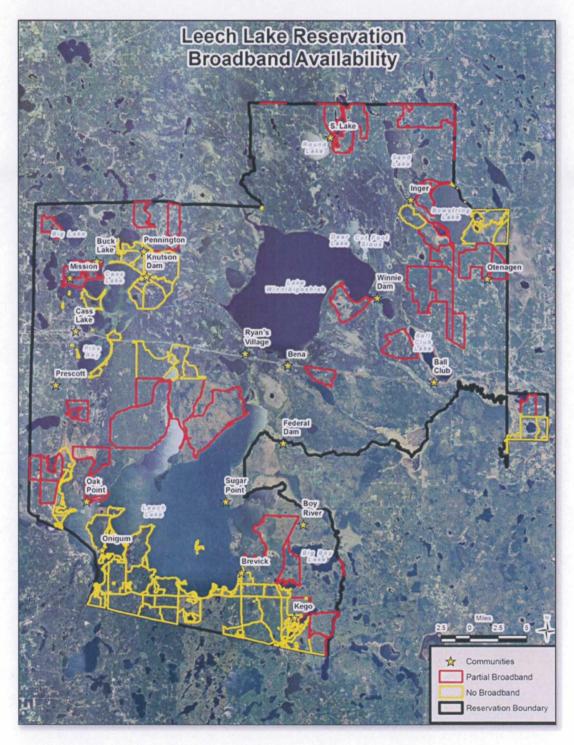


### **Exhibit C Photo Descriptions**

- 1. Power supply, fiber node, digital subscriber line access multiplexers (DSLAM), remote digital terminal (RDT)
- 2. Enterpoint receive unit and omnidirectional transmit antenna
- 3. Power supply, fiber node, digital subscriber line access multiplexers (DSLAM), remote digital terminal (RDT)
- 4. Power supply, fiber node, DSLAM
- 5. Power supply, fiber node, DSLAM
- 6. Chip Spann returning from a repeater
- 7. Power supply, fiber node, digital subscriber line access multiplexers (DSLAM), remote digital terminal (RDT) with fiber marker (left)
- 8. Repeater
- 9. High-bit-rate digital subscriber line (HDSL) repeater equipment for distribution of T-carrier circuits
- 10. CenturyLink (Qwest) line markers discovered near fiber optic route and fiber node
- 11. CenturyLink (Qwest) fiber optic cable marker the fiber is used for transport
- 12. Multiple demarcation boxes evidence of multiple providers and/or broadband platforms

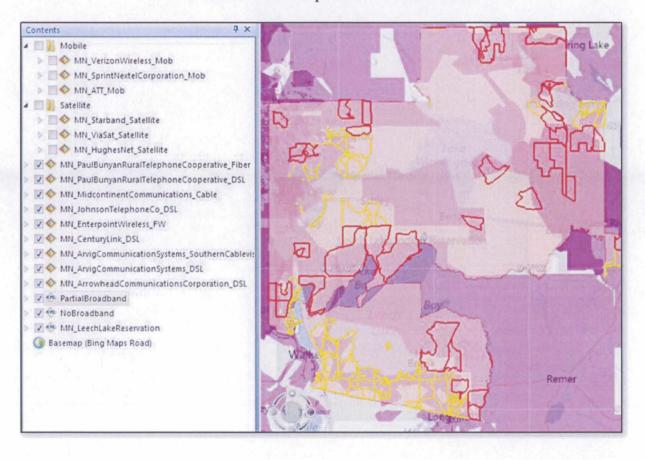
EXHIBIT D

LLBO Version of Partial Broadband and Unserved Areas



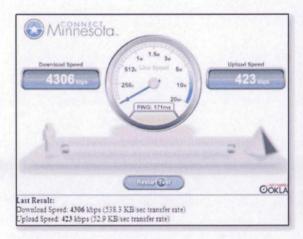
## EXHIBIT E

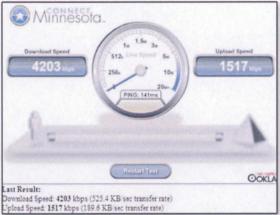
### Connect Minnesota Comparison of LLBO Version

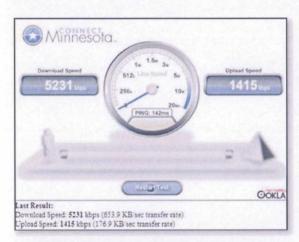


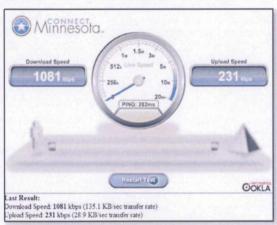
## EXHIBIT F

### Speed Tests and Trace Routes













```
Tracing route to google.com [74.125.225.36]
over a maximum of 30 hops:

1 6 ms 3 ms 3 ms 192.168.1.1
2 80 ms 65 ms 41 ms 207.191.148.33
3 44 ms 39 ms 40 ms 10.0.50.185
4 39 ms 40 ms 39 ms 10.0.50.169
5 39 ms 39 ms 44 ms 10.0.50.165
6 40 ms 41 ms 73 ms 10.0.4.1
7 38 ms 40 ms 40 ms 209-81-97-49.static.arvig.net [209.81.97.49]
8 61 ms 42 ms 43 ms 209-81-97-1.static.arvig.net [209.81.97.1]
9 44 ms 63 ms 47 ms 209-81-97-33.static.arvig.net [209.81.97.33]
```

## EXHIBIT G

# **Mobile Speed Tests**

Carrier	Avg Down	Avg Up
AT&T (4 devices   600 tests)	1.91 Mbps	454 Kbps
Searching for Service (1 devices   4 tests)	772 Kbps	5.9 Mbps
Sprint (2 devices   219 tests)	248 Kbps	100 Kbps
Unknown (2 devices   12 tests)	513 Kbps	0 Kbps
Verizon (3 devices   152 tests)	1.18 Mbps	1.04 Mbps
Virgin Mobile (1 devices   72 tests)	490 Kbps	348 Kbps

Network	Avg Down	Avg Up
3G (5 devices   668 tests)	1.68 Mbps	405 Kbps
CDMA - 1xRTT (1 devices   8 tests)	41 Kbps	140 Kbps
CDMA - eHRPD (1 devices   35 tests)	249 Kbps	285 Kbps
CDMA - EvDo rev. A (1 devices   64 tests)	546 Kbps	374 Kbps
GPRS/EDGE (3 devices   92 tests)	188 Kbps	85 Kbps
LTE (1 devices   58 tests)	2.26 Mbps	2.67 Mbps
NO DATA (1 devices   4 tests)	834 Kbps	0 Kbps
Unknown (4 devices   130 tests)	826 Kbps	252 Kbps

There are 4 records with "Searching for Service" as a carrier. According to the application vendor's technicians, the device(s) was moving each of the 4 times this occurred. It is their experience that the device may have reported "Searching for Service" when it posted its dynamic device data to request permission for a test – then came into service and successfully performed its test.

The "unknown" values in the data are entries in the network data from two peripheral devices (PC aircards) used to access the cellular network. The application vendor was unable to discern network information from the APIs or NDIS of these devices. Connected Nation has since provided the vendor with the model numbers of the devices so that they can update their software.

#### Peak Hour Performance Chart

Test Hours	Average Download	Average Upload	
8:00 a.m. – 5:00 p.m.	1.34 Mbps	470 kbps	
8:00 a.m. – 10:00 a.m.	1.44 Mbps	411 kbps	
12:00 p.m. – 1:00 p.m.	1.22 Mbps	437 kbps	
4:00 p.m. – 6:00 p.m.	1.22 Mbps	289 kbps	

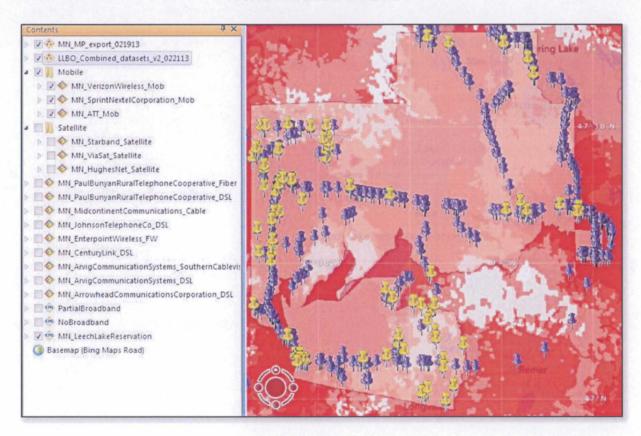
Turtle Island Telecommunications, Inc. ("TICOM") conducted extensive qualitative and quantitative analysis of Connected Nation's tests results. At the completion of TICOM's independent analysis, CN reviewed, and conformed, those findings. Of the 1,103 mobile tests, approximately 72% of the total "valid" tests were collected within the exterior boundary of the LLBO reservation. The results are listed below.

### 1. Of the 1,103 mobile test points:

- 458 tests, "meets or exceeds, 768 kbps x 200 kbps
- 544 tests are "below" 768 kbps x 200 kbps
- 101 tests held "invalid" results
- a. Of the 1,103 mobile test points, 877 were collected "Within" the exterior boundaries of the LLBO reservation.
- 358 tests, "meets or exceeds" 768 kbps x 200 kbps
- 435 tests are "below" 768 kbps x 200 kbps
- 84 tests held "invalid" results
- b. Of the 1,103 mobile test points, 226 were collected "Outside" the exterior boundaries of the LLBO reservation".
- 100 tests, "meets or exceeds" 768 kbps x 200 kbps
- 109 tests are "below" 768 kbps x 200 kbps
- 17 tests held "invalid" results
- c. Of the 1,103 mobile test points, 35 were collected "Within" the exterior boundaries of the LLBO reservation" and "Within" the *Mobility Fund Eligible Census Blocks*.
- 12 tests, "meets or exceeds" 768 kbps x 200 kbps
- 17 tests are "below" 768 kbps x 200 kbps
- 06 tests held "invalid" results
- d. Of the 1,103 mobile test points, 8 were collected "Outside" the exterior boundaries of the LLBO reservation" and "Within" the Mobility Fund Eligible Census Blocks.
- 01 tests, "meets or exceeds" 768 kbps x 200 kbps
- 07 tests are "below" 768 kbps x 200 kbps

- e. Of the 1,103 mobile test points, 77 were collected "Within" the exterior boundaries of the LLBO reservation" and "Within" the *CAF* Eligible Census Blocks.
- 17 tests, "meets or exceeds" 768 kbps x 200 kbps
- 50 tests are "below" 768 kbps x 200 kbps
- 10 tests held "invalid" results
- f. Of the 1,103 mobile test points, 30 were collected "Outside" the exterior boundaries of the LLBO reservation" and "Within" the CAF Eligible Census Blocks.
- 05 tests, "meets or exceeds" 768 kbps x 200 kbps
- 21 tests are "below" 768 kbps x 200 kbps
- 04 tests held "invalid" results

#### **Test Point Route Markers**



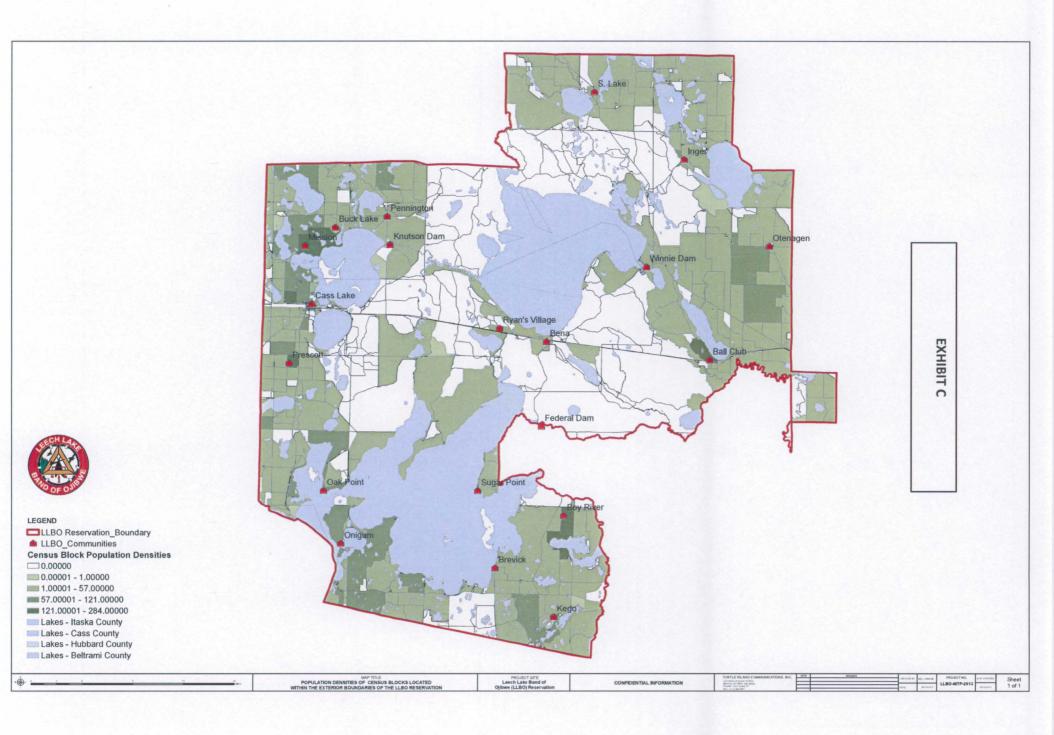
#### LEGEND

Yellow pins represent wireline and spectrum analysis test points Purple pins represent mobile speed test points

EXHIBIT B
UNDERSERVED CENSUS BLOCKS

		OHDENSEN	ALD CLIAN	JJ DEOCKS			
Census BlockID	HOUSING 2010	Populatio n	Area Land (sq.mi)	Area Water (sq.mi)	Road miles	CENTLAT	CENTLON
270079400021020	2	3	0.02	0.00		47.54235	-94.5642
270079400021022	8	23	0.28	0.00		47.53914	-94.5795
270079400021029	1	2	0.00	0.00		47.53812	-94.6428
270079400021059	10	10	0.99	0.13		47.46715	-94.6764
270079400021069	3	2	0.02	0.00		47.4958	-94.5865
270079400021082	7	5	0.39	0.00		47.48869	-94.5358
270079400021088	5	6	0.07	0.00		47.51531	-94.4982
270079400021098	5	15	0.44	0.00		47.52762	-94.5364
270079400021102	8	20	0.98	0.01		47.49102	-94.5537
270079400021106	141	284	2.79	0.04		47.45073	-94.5899
270079400021116	1	4	0.07	0.00		47.48199	-94.5171
270079400021123	29	16	3.27	0.00		47.53014	-94.4526
270079400021130	26	58	2.68	0.02		47.52875	-94.4859
270079400021145	4	1	0.01	0.00		47.45485	-94.4714
270079400021146	3	3	0.24	0.00		47.48655	-94.4741
270079400021156	3	12	0.05	0.00		47.44621	-94.4676
270079400021176	49	80	4.15	0.34		47.4681	-94.6232
270079400021223	8	23	1.26	0.00		47.41938	-94.6598
270219400011001	4	2	0.01	0.00		47.07115	-94.4059
270219400011110	10	10	0.06	0.00		47.05412	-94.378
270219400011112	2	1	0.01	0.00		47.05238	-94.3766
270219400012000	21	16	6.69	0.00		47.25253	-94.5872
270219400012039	2	3	0.01	0.00		47.20635	-94.6159
270219400012065	27	21	0.72	0.00		47.19684	-94.5294
270219400021128	1	2	0.02	0.00		47.30573	-94.121
270219400021130	4	11	2.56	0.00		47.33167	-94.1449
270219400021215	2	3	0.02	0.00		47.3091	-94.6241
270219400021256	70	18	3.15	0.00		47.21489	-94.4171
270219400023076	4	11	0.00	0.00		47.38065	-94.6038
270219602002028	13	28	1.89	0.00		47.19308	-94.2998
270219602002030	3	3	0.97	0.06		47.21149	-94.2956
270219602002032	93	63	0.26	0.00		47.19015	-94.3156
270219602002033	43	56	1.31	0.00		47.17402	-94.3061
270219602002039	7	6	0.09	0.00		47.07108	-94.2926
270219602002054	100	135	4.01	0.00		47.12594	-94.1749
270219602002055	6	26	0.01	0.00		47.14437	-94.1756
270219602002061	48	22	14.86	0.44		47.11212	-94.2357
270219602002069	27	17	0.19	0.00		47.07925	-94.2904
270219602002076	24	11	0.69	0.01		47.05871	-94.211
270219602002097	27	15	2.78	0.14		46.99943	-94.1758
270219602002111	6	2	1.69	0.02		47.08021	-94.1705

270219602002113	12	4	2.70	0.29	47.07634	-94.1349
270219602002131	3	3	0.32	0.00	47.07462	-94.105
270219602002132	7	6	0.72	0.00	47.08979	-94.1075
270219602002146	149	81	1.46	0.00	47.01121	-94.1955
270219602002179	10	2	0.01	0.00	47.06683	-94.2963
270219602002180	4	9	0.53	0.00	47.05927	-94.2952
270219602002193	36	12	0.85	0.00	47.05796	-94.3265
270219602002200	40	22	0.17	0.00	47.05844	-94.3447
270219602002231	33	25	0.42	0.00	47.17734	-94.291
270219602002233	17	27	0.01	0.00	47.04927	-94.3668
270619400001169	20	9	0.45	0.01	47.5775	-93.9826
270619400001170	1	2	0.01	0.00	47.58497	-93.9848
270619400001176	11	4	0.03	0.00	47.57682	-93.9681
270619400001293	1	2	0.03	0.00	47.572	-93.9731
270619400001306	1	2	0.01	0.00	47.55424	-93.9823
270619400001307	7	20	0.02	0.00	47.55327	-93.98
270619400002013	5	9	1.87	0.00	47.59541	-93.93
270619400002030	8	6	0.03	0.00	47.5741	-93.9072
270619400002067	1	4	0.04	0.00	47.54753	-93.9921
270619400002070	11	24	0.28	0.00	47.54653	-93.9735
	1234	1322	69.69	1.51		



BLOCK	GEOID	NAME	POPULATION
1	270219602002176A	Block 2176A	No Census Data
2	270219400011000A	Block 1000A	No Census Data
3	270219400022018A	Block 2018A	No Census Data
4	270219601001011A	Block 1011A	No Census Data
5	270219400023021A	Block 3021A	No Census Data
6	270219400022010A	Block 2010A	No Census Data
7	270219400022060A	Block 2060A	No Census Data
8	270219602002188A	Block 2188A	No Census Data
9	270219602002034A	Block 2034A	No Census Data
10	270219400011100A	Block 1100A	No Census Data
11	270219602002000A	Block 2000A	No Census Data
12	270219400021077A	Block 1077A	No Census Data
13	270219400011103A	Block 1103A	No Census Data
14	270570701001240A	Block 1240A	No Census Data
15	270570701001198A	Block 1198A	No Census Data
16	270570701001245A	Block 1245A	No Census Data
17	270570703001116A	Block 1116A	No Census Data
18	270570701001208A	Block 1208A	No Census Data
19	270570703001109A	Block 1109A	No Census Data
20	270219400021077B	Block 1077B	No Census Data
21	270219400022060B	Block 2060B	No Census Data
22	270219400022018B	Block 2018B	No Census Data
23	270219400011000B	Block 1000B	No Census Data
24	270219400022010B	Block 2010B	No Census Data
25	270219400011100B	Block 1100B	No Census Data
26	270219602002034B	Block 2034B	No Census Data
27	270219400023021B	Block 3021B	No Census Data
28	270219602002176B	Block 2176B	No Census Data
29	270219602002188B	Block 2188B	No Census Data
30	270570703001108B	Block 1108B	No Census Data
31	270570701001198B	Block 1198B	No Census Data
32	270570701001245B	Block 1245B	No Census Data
33	270570703001087B	Block 1087B	No Census Data
34	270570701001240B	Block 1240B	No Census Data
35	270570703001110B	Block 1110B	No Census Data
36	270570701001208B	Block 1208B	No Census Data
37	270219400022018C	Block 2018C	No Census Data



□LLBO Reservation\_Boundary

Census Block (CB) Designation

□ CB Not Designated for Tribal Mobility Funds

□ CB MIssing Census 2010 Population Data

